

REMARKS

Claims 2-5, 9, 12-26, 29, 31-38 and 41-50 are pending. Claims 2, 41, 43 and 45 have been amended. Claims 4-5, 12-26, 29, 31-33 and 47 are original. Claims 3, 9, 34-38, 42, 44, 46 and 48-50 have been previously presented. Claims 1, 6-8, 10-11, 27-28, 30 and 39-40 have been canceled. No new matter has been introduced by this amendment.

Claims 1, 43 and 45 have been amended to correct minor typographical errors. Claim 45 has been amended as suggested by the Examiner in the Notice of Allowability dated October 20, 2006. These amendments address only formal matters in the allowed claims and are supported by the present application.

Original claims 2 and 41 depend from independent claim 1. In response to the Office Action mailed March 6, 2006, claim 2 has been amended to be in independent form while claim 41 has been amended to depend from amended claim 2 (Claims 2 and 41 as amended on June 5, 2006 are included as Exhibit A). Amended claim 41 was allowed in the Notice of Allowance dated October 20, 2006. Applicants have now realized that amended claim 41 does not properly depend from amended claim 2; accordingly, they have rewritten this claim in independent format consistent with the examiner's indication of allowability. Support for amended claim 41 can be found in Applicants' specification, for example, in original claims 1 and 41. Applicants apologize for this oversight.

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Amendment under 37 C.F.R. §1.312 Dated January 22, 2007

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The examiner is kindly invited to contact the undersigned agent to address any additional concerns.

Respectfully submitted,



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Amendment and Request for Reconsideration
Dated June 5, 2006

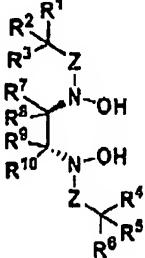
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In the Claims:

1. (Currently Amended) A method of performing a catalytic asymmetric oxidation epoxidation comprising:
reacting an alkene or cyclic alkene a-substrate with catalytic amounts of a chiral bishydroxamic acid ligand and a metal, in the presence of an oxidation reagent, to produce a chiral epoxide oxidation product.

2. (Currently Amended) ~~The method of claim 1,~~ A method of performing a catalytic asymmetric epoxidation comprising:

reacting an alkene or cyclic alkene with catalytic amounts of a chiral bishydroxamic acid ligand and a metal, in the presence of an oxidation reagent, to produce a chiral epoxide, where the chiral bishydroxamic acid ligand has a structure I:



where:

R¹, R², R³, R⁴, R⁵, and R⁶ are each independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkoxy, alkylamino, heterocycl, aryl, heteroaryl, and arylalkyl;

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or where R¹ and R², together with the atom to which they are attached, form a substituted or unsubstituted ring selected from the group consisting of cycloalkyl, heterocyclyl, or aryl;

or where R⁴ and R⁵, together with the atom to which they are attached, form a substituted or unsubstituted ring selected from the group consisting of cycloalkyl, heterocyclyl, and aryl;

R⁷, R⁸, R⁹, and R¹⁰ are each independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkoxy, alkylamino, heterocyclyl, aryl, heteroaryl, and arylalkyl;

or where R⁷ and R⁹, together with the atoms to which they are attached, form a substituted or non-substituted ring selected from the group consisting of cycloalkyl and heterocyclyl;

—Z— is selected from the group consisting of —C(O)— and —S(O)₂—.

3. (Currently Amended) The method of claim 2-4, where the metal is selected from the group consisting of vanadium (IV), vanadium (V), molybdenum (IV), molybdenum (V), and molybdenum (VI).

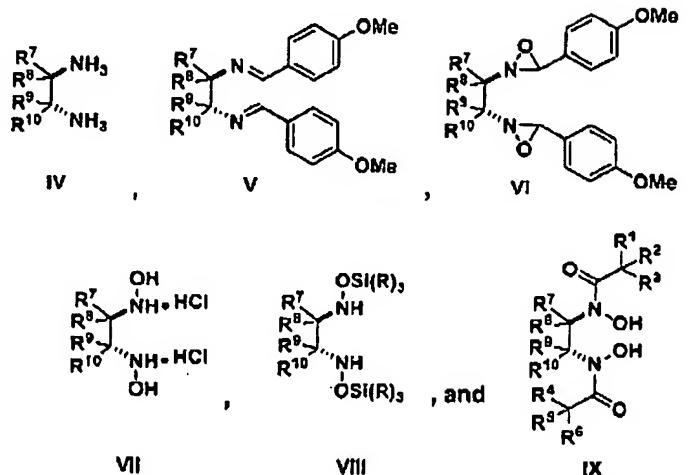
4. (Original) The method of claim 3, where the metal is selected from the group consisting of vanadium (IV) and vanadium (V).

5. (Original) The method of claim 3, where the metal is selected from the group consisting of molybdenum (IV), molybdenum (V), and molybdenum (VI).

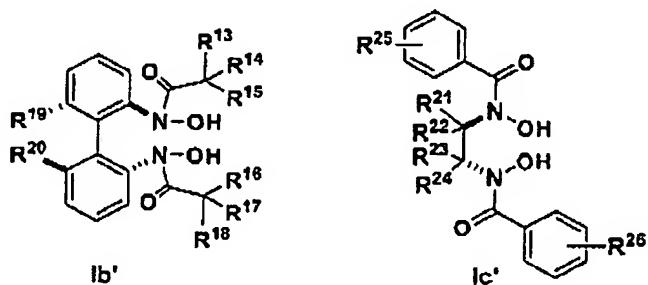
6. (Withdrawn) The method of claim 1 wherein the substrate is selected from the group consisting of sulfide, phosphine, alkene, and cyclic alkene.

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41. (Currently Amended) The method of claim 24, where the chiral bishydroxamic acid ligand (I) is selected from the following formulae:



where:

R¹³, R¹⁴, R¹⁵, R¹⁶, R¹⁷, and R¹⁸ are each independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkoxy, alkylamino, heterocyclil, aryl, heteroaryl, and arylalkyl;

R¹⁹ and R²⁰ are each independently selected from the group consisting of hydrogen, halogen, alkyl, cycloalkyl, alkoxy, alkylamino, heterocyclil, aryl, heteroaryl, and arylalkyl;

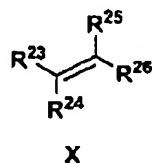
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R^{21} , R^{22} , R^{23} , and R^{24} are each independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkoxy, alkylamino, heterocyclyl, aryl, heteroaryl, and arylalkyl;

R^{25} and R^{26} are each independently selected from the group consisting of hydrogen, halogen, alkyl, cycloalkyl, alkoxy, alkylamino, heterocyclyl, aryl, heteroaryl, and arylalkyl.

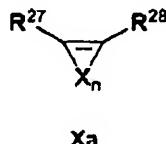
42. (Currently Amended) The method of claim 28, where the alkene is of the formula (X):



where:

R^{23} , R^{24} , R^{25} , and R^{26} are each independently selected from the group consisting of hydrogen, halogen, alkyl, cycloalkyl, alkoxy, alkylamino, heterocyclyl, aryl, heteroaryl, and arylalkyl.

43. (Currently Amended) The method of claim 28, where the alkene is a cyclic alkene of the formula (Xa):



where: